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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/729,967

12/09/2003

Masaya Ichinose

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12/15/2006

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EXAMINER

PARRIES, DRU M

ART UNIT

PAPER NUMBER

2836

DATE MAILED: 12/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/729,967	ICHINOSE ET AL.	
	Examiner	Art Unit	
	Dru M. Parries	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 December 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Claim Objections*

1. Claims 1-7 are objected to because of the following informalities: they all lack antecedent basis. For example, claims 1 and 2 state "the DC circuit"; claim 3 states "the power command value"; claim 4 states "the current command value"; claims 5 and 6 state "said detected load power value"; claim 7 states "said receiving power". Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1, 2, and 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (JP 2002-063927) and Jacobson et al. (2004/0095023). Yamamoto teaches a

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first converter (108) connected to an electric power system (70). He also teaches the idea of a circuit breaker being placed in between these two devices ([0077]). He goes on to teach a set of fuel cells (6) connected to a second converter (107), which outputs to a DC circuit. He teaches a secondary battery (74) connected to the DC circuit through a third converter (78) and the second converter, and a load (71) connected in parallel with said first converter. He also teaches a control unit (95), which controls the functions of all the devices in the system. He also teaches a current sensor detecting the current from said fuel cells (49). (Fig. 1 & 2) He goes on to teach the secondary battery outputting power via the third converter when the receiving power, due to the increase of load power exceeds the preset receiving power value ([0073]), which means that the control unit monitors the load demand and increases/decreases the fuel cell output (via the fuel cell and converters) when necessary to meet the load demand.

Yamamoto fails to teach detecting the currents and voltages and calculating the power at particular points in the circuit. Jacobson teaches having voltage and current sensors in each segment of a system and sending those values to the control circuit. He also teaches calculating the power (and average power) using the current and voltage values obtained via the sensors ([0033]-[0038] and [0053]). It would have been obvious to one of ordinary skill in the art at the time of the invention to have current and voltage sensor in each segment of the system (i.e. between each component) so the controller will have the information needed to accurately maintain the output power necessary to power the system, to know how to control the converters properly, and to quickly determine where a problem lies.

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5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al. (JP 2002-063927) and Jacobson et al. (2004/0095023) as applied to claim 1 above, and further in view of Kawakami (2002/0131285) and Schmidt (2003/0159865). Yamamoto and Jacobson teach a fuel cell system as described above. They fail to explicitly teach how the converters control the output of power, and also the type of load (70, i.e. power system) is being powered. Kawakami teaches a PWM controller which controls the output of converters via pulse width modulation of voltage references (command values) (Abstract). Schmidt teaches a load of a fuel cell system being a motor/generator. He also teaches a control unit controlling the operation of the motor/generator ([0005] and [0011]). It would have been obvious to one of ordinary skill in the art at the time of the invention to control the converters using PWM since Yamamoto was silent as to how the converters were controlled and this method is known in the art. It would have also been obvious to one of ordinary skill in the art at the time of the invention to have the load (i.e. power system) be a motor/generator, since Yamamoto was silent as to what the specific load being powered is and Schmidt teaches a fuel cell system with a specific load that is known in the art.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dru M. Parries whose telephone number is (571) 272-8542. The examiner can normally be reached on Monday -Thursday from 9:00am to 6:00pm. The examiner can also be reached on alternate Fridays.


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus, can be reached on 571-272-2800 x 36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DMP

12-8-2006

  
**CHAU N. NGUYEN**  
**PRIMARY EXAMINER**